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NORTHEASTERN FOREST PEST REPORTER

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FOREST INSECTS

The probability of insect attack in a given area is affected by many factors. Some factors, such as the relative abundance of the insect and the time of the year, are obvious and routinely incorporated into the planning and conduct of surveys and control operations every year. Others, such as tree vigor and location with respect to sources of infestation, are generally recognized also. Less well understood are the changes brought about by the insect itself. Here, the entire micro-environment can be affected as well as the condition of the host tree. The insect and the tree or stand are in a continual dynamic state, and the changes that do occur are important because they directly and indirectly determine the probability of attack and subsequent injury by the insect.

SPRUCE BUDWORM (Choristoneura fumiferana). Aerial spraying in northern Maine was completed on June 26 this year with the follow-up survey of survival being undertaken 7 to 10 days later. The aerial survey of current defoliation was conducted by Maine Forest Service personnel July 7 and 8. The regular egg mass survey was initiated July 31 and will be completed in several weeks. Infestations expected in 1962 will be delineated when the data of the aerial and egg mass surveys are compiled and summarized.

PINE SAWFLIES A pine sawfly (Neodiprion sp.) is reported more widespread on pitch pine this year in Massachusetts in the towns of Wareham, Rochester, Carver, Plymouth, and Bourne. Many egg masses of the red-headed pine sawfly (Neodiprion lecontei) are expected to hatch and cause damage to young red pine in a plantation near Harrisville, Lewis County, New York. In Virginia, heavy defoliation of pines is expected also in several areas. Pine sawflies (unidentified) have been heavily attacking 3- to 5-year-old loblolly pine in Somerset, Wicomico, and Worcester Counties, Maryland. The introduced pine sawfly (Diprion similis) was observed in light local infestations in Strafford County, New Hampshire. A

Neodiprion sp. severely defoliated pitch pines near Londonderry, N. H.; whereas the larvae were very abundant, the cocoons were very sparse (indicating either a much reduced population or failure to search for the cocoons in the right places). The red pine sawfly (Neodiprion nanulus) is reported locally abundant in eastern Maine.

WHITE-PINE WEEVIL (Pissodes strobi). Damage by this insect to white pine appears relatively unchanged from last year in Rhode Island. Preliminary results indicate good control of the weevil on 150 acres of white pine in western Pennsylvania using a back-pack sprayer and DDT. Damage to Norway spruce by the weevil has been heavy particularly at Cook Forest, Clear Creek, and other State Parks in western Pennsylvania. On the Allegheny National Forest approximately 700 acres of Norway and white spruce were sprayed in April by helicopter with DDT for weevil control. A complete check on the results of this control project will be undertaken in August or September. Continued heavy damage to white pine in New York State is reported. Current control recommendations are available on request from the Forest Insect Laboratory in New Haven. An experiment at New Haven to test the effectiveness of lindane and malathion with three different extenders applied by mistblower and hydraulic sprayer showed that lindane was definitely more toxic than malathion and reduced feeding by adult weevils much more markedly. Aroclor 5460 extended the toxic effect of both insecticides most efficiently. However, Rex Wall Size (available in any paint or hardware store) was equally effective in reducing feeding. As egg laying by the weevil in the spring involves chewing an egg niche in the bark of the leader, this material might provide satisfactory protection with, or even without, a toxicant.

PINE LEAF APHID (Pineus pinifoliae). A recent report from Vermont indicates that gall formation on red spruce was late (May 20) this year and very spotty. Several small scale tests using DDT, Sevin and malathion apparently revealed that these insecticides were not very effective in preventing the gallicola form of this insect from becoming established on white pine. The test was designed to simulate aerial sprays by ground equipment -- this is difficult to do. In eastern Maine, continuing heavy infestations are found on white pine. In New Hampshire, this insect is relatively abundant in all but the southern tier of counties. Particularly severe damage to white pine has occurred at Hanover and Passaconway. Other gall aphids were fairly numerous on spruce in the northern part of the State, making identification of the pine leaf aphid more difficult.

RED-PINE SCALE (Matsucoccus resinosae). This has been found at four other locations in northern New Jersey -- at Demarest (Bergen County), Ringwood (two spots just north of Wanaque), and Mahwah (Bergen County, at New York Line).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana). In Indiana, Cambria, and Armstrong Counties, Pennsylvania, this insect has been especially serious in red pine plantations. Damage has been so serious in the southern tier counties in Pennsylvania that planting of red pine has been discouraged, as has been the case in northern New Jersey and southern Connecticut. The shoot moth is present again in the coastal area of southern Maine. There is no record of this insect from New Hampshire -- observers should be on the lookout for it, however, in the coastal portion and perhaps elsewhere in Strafford and Rockingham Counties.

SOUTHERN PINE BEETLE (Dendroctonus frontalis). A cooperative aerial survey by Delaware, Maryland, Virginia, and the U. S. Forest Service over the Delmarva

Peninsula revealed some additional beetle activity around the areas noted last year. The survey was conducted from June 26 through June 30. Since new attacks were found in about three-fourths of the 1960 areas in Virginia and Delaware, it was recommended that another aerial survey be flown this fall to record any further changes in these infestations.

MISCELLANEOUS INSECTS ON CONIFERS The pine bark aphid (Pineus strobi) is reported less severe on white pine in western Pennsylvania this year -- in Rhode Island infestations are increasing on the same trees infested previously. The balsam fir sawfly (Neodiprion abietis) is reported common in survey collections from northern and eastern Maine. Local infestations of the larch sawfly (Pristiphora erichsonii) on larch and the yellow-headed spruce sawfly (Pikonema alaskensis) on spruce are also reported from the same general area. Several species of leaf miners have been heavily damaging northern white cedar in central Maine. The European spruce sawfly (Diprion hercyniae) is reported scattered on spruce in eastern Maine. An area of 4 acres of white pine near Middlebury, Vermont was so heavily infested with the pine needle scale (Phenacaspis pinifoliae) that aerial spraying with two pounds of malathion in about eight gallons of water with Plyac as a sticker was carried out on May 27. No new crawlers were observed on the current growth on July 17. Turpentine beetles (probably Dendroctonus terebrans) are causing some mortality of scattered pines in Lunenburg, Amelia, Campbell, Princess Anne (10 trees on 5 acres), and Isle of Wight (2 trees on 10 acres) Counties, Virginia. Most damage has been found in loblolly, shortleaf, and Virginia pines. Ips bark beetles have caused scattered mortality of pines throughout Virginia. Pales weevil (Hylobius pales) has caused some shortleaf and loblolly seedling mortality in Amherst and Nelson Counties, Virginia and has also caused some mortality of white pine seedlings in western Pennsylvania. The pine false webworm (Acantholyda erythrocephala) is reported light on Austrian and red pines in the Lewis County Experimental Forest, New York. Infestations of the eastern spruce gall aphid (Chermes abietis) are reported throughout the region. A heavy infestation of the pine gall weevil (Podapion gallicola) is reported in the Pack Forest, Warren County, New York. A moderate infestation of the Saratoga spittlebug (Aphrophora saratogensis) is reported on 30 acres of red and Scots pine in Clarion County, Pennsylvania.

NOTE: In addition to releases on the Green Mountain National Forest in Vermont the predator of the balsam woolly aphid, Laricobius erichsonii, was also released on state and private land in Vermont during May (see July 12, 1961 issue of PEST REPORTER).

GYPSY MOTH (Porthetria dispar). Widespread egg masses found last winter in New Hampshire indicated subsequent widespread defoliation, which did not actually occur this spring. Only localized heavy defoliation was found. In Maine, "hundreds" of acres of hardwood were stripped in the Waterboro, Lyman, Alfred areas of York County. In the Acadia National Park approximately 1,000 acres were heavily defoliated, and a total of 1,800 acres were defoliated near Tunk Lake (T10 S.D.) and Beech Hill (SW corner T24 M.D.) Washington County, Maine. In Vermont the insect is definitely increasing in the Champlain Valley. In New York it is also increasing in Washington, Saratoga, and Warren Counties. This survey is as yet incomplete, however. In Connecticut male and female pupae were found for the first time in the towns of Avon, Canton, East Windsor, and West Granby.

Exploratory tests with the new synthetic sex attractant are being conducted by entomologists of the Connecticut Agricultural Experiment Station, New Haven

Laboratory, and Plant Pest Control Division, A. R. S. There are some interesting possibilities in using this material for control purposes.

MISCELLANEOUS INSECTS ON HARDWOODS Light cankerworm damage is reported from Adams, York, Franklin, Mifflin, Juniata, Perry, Carbon, Luzerne, and Bedford Counties, Pennsylvania. The elm leaf beetle (Galerucella xanthomelaena) is generally abundant on elms throughout the Northeast. The mountain ash sawfly (Pristiphora geniculata) is generally common throughout Maine on mountain ash. The birch casebearer (Coleophora salmani) is relatively abundant in northeastern Aroostook County on white birch. Damage by the gregarious oak leaf miner (Cameraria cinninatiella) is reported on oaks near Peterburg and in Dinwiddie and Prince George County, Virginia. The ugly nest caterpillar (Archips cerasivorana) is reported from several locations in the Champlain Valley of Vermont. It is also reported from Franklin, Clinton, and Essex Counties, New York. Several small infestations of the satin moth (Stilpnotia salicis) occurred on poplar in the towns of Chazy and Champlain, Clinton County, New York. Oak leaf roller (Argyrotoxa semipurpurana) infestations continue for the sixth consecutive year on scarlet and red oaks near Williamsport, Pennsylvania.

FOREST DISEASES

Weather conditions since the first issue of the PEST REPORTER have been moderately fair for disease development. Winds have been generally light so their effect on spore dispersal has probably been less than usual. Temperatures have been lower than average, especially from mid-June to mid-July. In southern Connecticut night temperatures were generally in the low sixties and the highs have averaged in the mid-seventies. The cooler than average night temperatures have prolonged the early morning dew periods. From mid-July, night temperatures were generally in the low seventies, and the highs from the high seventies to mid-eighties. The last week of July had above-average temperatures ranging from the high seventies and low eighties to the mid-nineties. New York City, for example, reported records were broken for a number of consecutive days when recorded temperatures were 90° or above.

Rains were moderately well scattered, although somewhat erratically distributed -- but they were generally light. We have had no serious droughts, and rains though light generally terminated what might have developed into moderately severe dry periods. On the whole, July was rather dry with some rain recorded on 10 days, most of it coming in mid-July. We have had perhaps more than the average number of cloudy days, and the temperature-humidity index has been on the uncomfortable side, especially during the latter part of July.

It is expected that foliage diseases, previously retarded by the cool spring weather, and largely unnoticed due to early insect defoliation, will be more prominent from now on. The most conspicuous diseases reported for this issue are wilts, Cytospora branch cankers on spruces, various diebacks and declines, and unexplained troubles in young conifer plantations, including the multiple leader condition.

We have a couple of follow-up reports of the late frost injury reported in the first issue. One tells of frost rings resulting from the severe late frost. In West Virginia frost rings in red pine were present where damage to beech was evident at high elevations. The frost rings were less pronounced at somewhat lower elevations where beech injury was slight or absent. No frost rings were detected in red spruce or beech. The other report from Connecticut tells of receiving a number of inquiries from people about the new growth on oak, etc. The new growth,

from frost injured twigs or from insect defoliation, has a reddish color, is mainly limited to branch ends, but is scattered throughout the tree crowns. It has been very conspicuous this year.

LEAF AND SHOOT DISEASES Leaf spot diseases are of minor importance throughout the region. In fact, none of the foliage diseases have been alarming. A Pennsylvania report says leaf spotting is light on red and sugar maples. Leaf spot of red maple is general in Henry County, Virginia. A leaf spot on boxelder, caused by Septoria aceris, has been noted in Vermont, and New Hampshire reports that a Septoria leaf spot of paper birch seedlings is common. From eastern Massachusetts we received word of an unidentified bacterial leaf spot of tulip, and a bacterial shothole, caused by Xanthomonas pruni, affecting peach and plum. Also that hawthorne leaf blight, caused by Fabraea maculata, previously reported, is serious causing approximately 40 percent defoliation. Total defoliation is expected on some varieties which have not been sprayed. Maine also reports that hawthorne leaf blight is abundant on some ornamental hawthornes. Oak leaf blister (Taphrina coerulescens) has been noticed in nursery plantings of red oak. Leaf scorch of sugar maple, especially on dieback affected trees, is frequent and serious, as noted along Route 20 from Boston, Mass. to the central part of the State.

Anthracnoses are reported as of little importance this year. Reports tell of light infections on red and white oaks in Clearfield, Jefferson, and Clarion Counties in Pennsylvania. It is present on white oak and sycamore in western Maryland. An eastern Massachusetts report tells of having received specimens of Gloeosporium apocryptum on sugar maple and of Gnomonia caryae on hickory. A previous report of ash defoliation in the Augusta area of Maine has now been identified as ash anthracnose, and that considerable defoliation occurred in June in Kennebec County.

Shoot and Twig Blights.--Willow blight is reported from Berkshire County, Massachusetts, and is very common in Maine this year. Diplodia twig blight is said to have practically eliminated some trees of Austrian pine that have borne light to moderate infections of the fungus. It seems particularly bad along the Hudson River Valley. This disease may be responsible for the Scotch pine dieback prevalent in Indiana, Cambria, and the south-central counties in Pennsylvania. It is quite bad in 25- to 30-year-old plantations, and salvage cuttings have been made whenever markets permit. Reports of juniper blight, Phomopsis juniperovora, have been received from eastern Massachusetts and from Virginia where it occurs on 2-year seedlings of red cedar in the New Kent nursery.

RUST DISEASES Blister rust (Cronartium ribicola) infections of Ribes have developed very rapidly in New York. On many areas infection is so heavy that leaves have turned completely yellow, making Ribes infections easy to spot. Telia are present at an early date, resulting from the very favorable weather conditions. A Pennsylvania report states that Ribes infection, so far, has been light to moderate, but weather has been favorable and a gradual buildup is on the way, presaging ultimate heavy infection. A report from Virginia tells of one-tenth of the trees in a plantation in Highland County being infected. Another Virginia report speaks of several small areas of blister rust in Highland County -- areas never under control. Heavy Ribes infection has been observed in Augusta and Rockingham Counties.

Blister rust cankers on western white pine in the vicinity of Maryland, New York have not responded to Acti-dione treatment (150 p.p.m. as basal spray). Preliminary results of spraying Ribes in Pennsylvania are encouraging -- both fuel oil base and water mixtures have been used. Blister rust control has been good in all control areas.

Other rusts.--In addition to blister rust, other rusts reported include a gall rust on Virginia pine in Henry County, Virginia; cedar apple rust in Smyth County; a needle rust on loblolly in Norfolk County, and telial stages of fusiform rust on oaks from New Kent. Ash leaf rust, Puccinia sparganioides, is present along the coast, but not serious in New Hampshire. The previous report of ash rust in southern Connecticut continues to be severe, as observed on two large trees. Both trees have shed about 75 percent of their leaves, and aecia have been blossoming abundantly, shedding fresh spores during every period of rain since early spring through July into August -- a long period for aeciospore production.

WILT DISEASES Dutch elm disease (Ceratocystis ulmi) is widespread and now quite evident throughout the Northeast. It became especially evident during June and later. A Pennsylvania report states it is particularly apparent in western areas of the State. Dutch elm disease is frequent and occurs throughout Massachusetts. New Hampshire reports DED is taking a heavy toll around the Laconia area and another report from the State says the disease is about the same as in the past few years. Virginia reports DED present in Fauquier County. A report from western Maryland tells of an elm which turned completely brown, but the cause has not been diagnosed as DED. Phloem necrosis appears to be a likely suspect.

Verticillium wilt (Verticillium albo-atrum) may possibly be worse this year than last. We noticed a sudden outbreak of the disease affecting Norway maples in Hamden, Conn.

Oak wilt (Ceratocystis fagacearum) has been noted in western Maryland. Pennsylvania reports that oak wilt has been slow in appearing this year, although latest survey reports indicate at least as many infections as normal, with an upward trend possible. In Virginia oak wilt has been found on the George Washington National Forest. in Rockingham, Shenandoah, Augusta, Highland, Bath, and Page Counties.

CANKER DISEASES Cytospora canker of spruce (Cytospora [Valsa] kunzei) is one of the more noticeable diseases at this time. One report states, "The incidence of Cytospora on spruce, particularly Colorado blue spruce, has taken a sharp upturn. Many large trees which to all appearances have remained untouched by the disease suddenly have entire sides going out from the simultaneous attack on many branches." Light infections of the disease are reported on Japanese larch on New York Reforestation Area Jefferson No. 3.

Maple cankers.--We have received word that a maple canker, associated with Pyrenochaeta sp., was collected in New York State from Cortland County. This canker was first reported in the second issue of the PEST REPORTER, Aug. 10, 1959, from Pennsylvania. No one knows what part this maple canker plays in the complex of diseases included in the maple dieback and decline. It appears to differ in some respects from the condition so prevalent in New England roadside trees, especially in the degree of stem and branch cankering. Dr. Stambaugh of Penn State University has worked on the disease in Pennsylvania, and early this spring was asked to prepare a brief statement of his findings for the PEST REPORTER. [Come on, Bill, -- we will put your contribution in our third issue!] Dr. Rich of the University of New Hampshire says, "Our biggest problem is the decline of our roadside maples." He says a graduate student is being assigned to work on this problem starting July 1. Cytospora canker of maple is reported somewhat more prevalent and more severe in 1961 than in previous years, in New Hampshire.

Beech-scale-Nectria.--Word from New Hampshire on this disease says that the sporodochial stage of the fungus component is common and these white clusters of the fungus should not be confused with the scale, which they somewhat resemble.

The mycoparasite, Gonatorrhodiella highlei, seems to be at its peak at this time and can commonly be seen. It was observed while cutting beech that many trees had an abundance of scale and Nectria in their crowns, with stems being relatively clean.

Other canker diseases reported for this issue include some reported previously. Among them are Tympanis canker on low vigor planted red pines; an unknown basal canker on white pine in a plantation in the DeRuyter area of New York; and, Caliciopsis canker in western white pine in the vicinity of Maryland, New York.

ROTS Fomes annosus.--Reports continue with a report from Virginia of slight to severe damage on loblolly pine in Albemarle and Orange Counties and suspected infections of red cedar in Louisa County. Word from Rhode Island says F. annosus infected spots continue to enlarge normally although no new infections were noted in stands being marked. A Vermont report tells of additional infections discovered in a 40-year-old red pine plantation in Windham County, and another speaks of the lush growth of sporophores noted in New York State. A report from Massachusetts tells of a 40-year-old, 8 x 8-foot, red pine plantation west of Whately that had been thinned once in 1953. Although F. annosus was fruiting on stumps, no damage was observed among the standing living trees. Word from Connecticut mentions a planting of white spruce for Christmas trees. The planting had been made on light, sandy soil formerly occupied by pitch pine. It is now 5 to 9 years old and F. annosus is present and fruiting on some of the affected trees. It is quite unusual to find evident damage to such young trees. We may have additional information concerning this infection for our next issue of the PEST REPORTER. Finally, we would like to call attention to the F. annosus publication, available for distribution, listed at the end of this issue.

Other rots.--At this time many wood rotters are fruiting abundantly. Further information from Vermont concerning a serious Armillaria mellea infestation of red pine on the Groton State Forest is at hand. Mortality has continued. Some 8 to 10 separate infections have created large openings which are now coalescing, making the losses from A. mellea much more evident. A report on root rot damage by Polyporus tomentosus to a Norway spruce planting in the Poughkeepsie area of New York was received. This information may have been previously reported from another source. Finally, damage by Stereum sanguinolentum, which entered Norway spruce through pruning wounds, is reported from the Alder Creek Reforestation Area of New York.

DIEBACKS The most conspicuous tree troubles are the diebacks and declines. They are widespread and serious, affecting a number of tree species. The most alarming in the whole Northeast are ash and maple dieback and decline. Reports of diebacks for this issue are notable for the number of reports received, the seriousness of the troubles, and their wide distribution.

Ash dieback.--The trouble seems more intense than last year. The number of trees involved and the rate of deterioration seems to have increased considerably. Many trees in central and western Connecticut are exhibiting symptoms where none were observed before the current season. Dead and dying ash occur around Patterson, Clifton, Newark, and East Orange in New Jersey as observed in mid-July. Ashes in the vicinity of our large cities are declining rapidly as noted around Philadelphia, Pa. and Boston, Mass. Aerial observations in areas of known high concentration, such as the Albany-Poughkeepsie area of New York, reveal dead and dying ash easily recognized from the air due to typical tree form and the orange color of infected crowns. There is a high degree of seedling deterioration, even in stands where the ash overstory is comparatively healthy. Other reports came from western Maryland,

Pennsylvania, eastern and the Berkshire region of Massachusetts, and from New Hampshire. Cankers of Cytophoma pruinosa, commonly associated with ash dieback elsewhere, were not seen on the New Hampshire affected trees.

We have word that two graduate students of Syracuse University have recently been assigned to work on the problem of ash dieback. It is very encouraging to learn of any investigations of the dieback problems. We also hear that some decay fungi have been isolated from the roots of declining ash, including one identified as Ustulina vulgaris.

Maple dieback.-- Maple dieback and decline is very bad this year. After two years of dubious improvement, the maples appear to be on the downhill road again. Maple dieback figured prominently in the reports for this issue and most seem to agree the condition of maples is worsening. The sad state of the maples is exemplified by one report of young maples 4 and 5 feet in height dying along roadsides in some places. Nearly all contributions for this issue of the PEST REPORTER mentioned maple troubles of roadside trees -- how are the woodland maples doing? [Also see remarks under "maple cankers;"]

Other dieback conditions.--Oak mortality seems more of a problem in the southern part of our territory than further north, although a note from Virginia states that oak dieback (which has been active in recent years on portions of the George Washington National Forest) seems dormant, with only an occasional tree seen now. We suspect, however, that these oak troubles may be more widely reported in the future. Oaks have suffered heavy insect defoliation in the past two years, and even now many have scattered dead branches in their crowns. Other declining conditions and mortality is reported, some mentioned previously. For example, a New York report mentions the mortality of white pine associated with heavy inter-nodal resinosus; also a decline of beech.

MISCELLANEOUS TROUBLES From Virginia comes word that chlorosis and decline of pin oak is present in Lexington County; also that an Exosporium sp. has been diagnosed from a dieback of red cedar in Hanover County; and that oak mortality from an unknown cause is present. White pine needle blight is rather rare in New Hampshire. Red maple is having its troubles. Large areas of red maple in and around the Hudson River Valley look sickly with a yellow cast of the foliage. The foliage is thin and the trees have a generally unhealthy appearance. Most of the trouble is in low areas and along stream beds. It has been suggested that a higher than average water table may be the cause. A thinning and discoloration of needles of large white pines in the Cook Forest area of Pennsylvania has been reported. Also from Pennsylvania is a report of smoke and industrial gas injury. Trees are being killed in the Susquehanna River Valley of Clearfield County. White pines and hemlock die first, then evergreen ornamentals, followed by fruit trees, and now certain hardwoods. The killing appears to follow a definite pattern up the river and in the direction of the prevailing winds.

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A recent publication on Fomes annosus:

Mook, Paul V. and Harold G. Eno. 1961. Fomes annosus: What it is and how to recognize it. Station Paper No. 146, Northeastern Forest Expt. Sta., Upper Darby, Pa. [Copies are also available from the Forest Insect and Disease Laboratory, NEFES, 335 Prospect St., New Haven, Conn.]